

NIEHS DIRECTOR'S PERSPECTIVE

Strategic Planning: Establishing Need and Clarifying Motivation

The overall goal of the strategic planning process at the NIEHS is to establish research priorities and develop a plan to support the very best science that will have the greatest impact on human health. To accomplish this, we will focus our initial efforts in four broad areas of environmental health sciences: basic research to understand how environmental exposures fundamentally alter human biology; human health and diseases that are caused at least in part by environmental exposures, and the use of environmental exposures to understand the etiology and pathogenesis of complex human diseases; global environmental health initiatives that support research programs to understand the health risks for populations that are excessively exposed as well as their solutions; and training and education efforts to develop comprehensive approaches that integrate environmental health sciences with related disciplines in basic science, computational biology, medicine, and public health. While the strategic planning process will focus on identifying critical opportunities and programmatic approaches to these areas of research and training, we believe it may be helpful to discuss the underlying needs and motivations that prompt us to dedicate our time and resources to this endeavor.

Fundamental to the vision of the NIEHS is an emphasis on human health and disease, consistent with our congressional mandate. Although the NIEHS has made important contributions toward the understanding of human health and disease, our progress has not nearly been enough. One impediment to making advances has been a primary focus on exposures and toxicants that has sometimes led investigators supported by the NIEHS on a circuitous and inefficient path toward understanding human health and disease. We believe that by moving beyond a focus primarily on exposures to an emphasis on pathophysiologic end points, investigators in our field will have a more positive effect on human health. Strategic planning is needed to define the proper balance between exposure-oriented research and disease-oriented research, identify new opportunities, and consider the programmatic approaches that are uniquely relevant to our field of health sciences research.

Environmental health sciences research—like no other field—is not limited by an organ system, a methodological discipline, a disease, or a population, and is therefore by nature interdisciplinary. Our intramural and extramural research programs, however, are not particularly focused on taking advantage of many interdisciplinary research opportunities available today. Thus, an opportunity exists for us to rectify this situation through better development of teams of scientists whose complementary skills and areas of expertise will enable us to more efficiently tackle the fundamental questions of our time; this approach will also better align the NIEHS with the NIH Roadmap. The strategic planning process is essential to understanding how to foster this more efficient and powerful interdisciplinary approach; how to eliminate barriers to cross-fertilization; how to enhance and hasten the multidirectional movement of science between the bench, the bedside, and the public; and how to develop mechanisms to prospectively identify interdisciplinary opportunities in environmental health sciences that will most substantially impact human health.

Training the next generation of scientists is one of the most important challenges before us. However, information from the field suggests that many of our current trainees are not equipped to deal with the research opportunities and challenges in environmental



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health sciences. We believe this presents a critical need to find ways of attracting more of the best and brightest young people to our field and providing continued support to trainees during times of transition. If we can do this, it will serve to support an integrated research approach that encourages disease-oriented research. To determine the best mechanisms for accomplishing these goals will clearly require strategic planning.

Our view of environmental health sciences is of an overarching discipline that addresses etiologic considerations that are common to many, if not all, of the diseases people face. Environmental health sciences must play a more central role in understanding how genes work in

biological systems, how genetic variants contribute to the development of disease, and why individuals with the same disease have very different clinical outcomes. Our scientists and our knowledge of environmental health sciences are absolutely vital to understanding human biology and human disease. In fact, we represent the critical link between exposures and biological responses that are so vital to understanding many different diseases. While our field should be one of the most exciting scientific disciplines in biomedical research, the inherent opportunities in environmental health sciences often are not fully appreciated or embraced by our colleagues. Strategic planning is needed to better understand why this is so and to find ways to address it. We need to persuade the “non-believers” of the relevance of environmental health sciences to human health. We must attract more passionate, hopeful, and gifted researchers to our discipline and embrace the excitement and potential of our field.

Inclusion of a broad array of interested individuals in the strategic planning at the NIEHS is a first step in this process, and will provide a unique opportunity for us to gain the ideas, perspectives, and insights of a large number of individuals who are invested in the future success of this institute. We eagerly look forward to your contributions and fully intend to incorporate your valuable ideas into the plans that will guide us over the next period of development at the NIEHS.

Samuel H. Wilson, MD
Deputy Director, NIEHS and NTP
E-mail: wilson5@niehs.nih.gov

David A. Schwartz, MD
Director, NIEHS and NTP
E-mail: schwartzd@niehs.nih.gov